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COUES'S KEY TO NORTH-AMERICAN BIRDS.

Key to North-American birds. Containing a concise account of every species of living and fossil bird at present known, from the continent north of the Mexican and United-States boundary, inclusive of Greenland. By ELLIOTT COUES. 2d ed. Boston, Estes & Lauriat, 1884. 30+863 p., 561 fig. 8°.

THE original edition of the 'Key,' published in 1872, consisting of three hundred and sixty-one imperial octavo pages and two hundred and thirty-eight woodcuts, is well known to all students of American birds. The present edition is not only 'entirely rewritten,' but contains nearly four times as much matter, and more than twice as many illustrations, as the first; yet in bulk the work is scarcely larger, being printed on thinner paper and in smaller type. While most of the old illustrations have been retained, many have been replaced by better ones, nearly one-half are added from the author's previous works and other published sources, while some fifty or more have been engraved expressly for this edition. While the old 'Key' has proved eminently useful, it was not without its defects, owing mainly to extreme conciseness of treatment. The present 'Key' is modelled on the plan of the old, and written in the same spirit, but is the same mainly in title.

The work opens with an 'historical preface,' occupying some sixteen pages, in which is felicitously sketched the history of North-American ornithology from its earliest beginning nearly to the date of the first edition of the 'Key.' The history is divided into 'epochs' and 'periods,' and the influence various writers have had upon the progress of the subject is judiciously weighed, and thrown into strong relief. Then follows the preface proper, in which the author explains the differences between the present edition and the earlier one, and makes his acknowledgments of aid, in the preparation of the work, received from various persons and sources.

The work proper is divided into four 'parts.' Part i. (pp. 1-58) is entitled 'Field ornithology,' and forms a manual of instruction for collecting, preparing, and preserving birds. This is a nearly verbatim reprint of a separate work having this title, published by the author in 1874, and already well known as a work of great practical usefulness to collectors. Part ii., 'General ornithology,' is devoted to an elementary exposition of the structure and classification of birds, and occupies pp. 59-236. It (1) defines birds as distinguished from other vertebrates, (2) discusses the prin-

ciples of classification and their application, (3) gives definitions and descriptions of the exterior parts of birds, and (4) devotes nearly one hundred pages to the anatomy of birds, giving a general outline of the subject. Part ii. is very fully illustrated with well-chosen figures. The portion of the text devoted to the anatomy of birds is entirely new, and suffices to give very fairly the rudiments of the subject, which is all the author attempts. Many of the figures are drawn from nature by Dr. Shufeldt expressly for the work: others are after Parker, Huxley, and other well-known authorities. This part closes with artificial keys to the orders, sub-orders, and families. The attempt made in the old 'Key' to carry the student at once to the genera is here abandoned.

Part iii. (pp. 237-820), devoted to a 'Systematic synopsis of North-American birds,' forms, of course, the main body of the work. It describes all the species and sub-species, and defines the genera and higher groups of North-American birds. The descriptions are much amplified from those given in the first edition, but with the idea still in view of sharp definition. The references to authorities previously given are omitted, perhaps not unwisely; and in their place we find an epitome of the life-history of the species, with special reference to their nesting-habits, song, flight, and migrations. These display at its best the author's happy knack of hitting in few words a bird's leading and characteristic traits. More space is also given to an account of the geographical distribution of the various species and races, and the plumages of female and immature birds are more fully and much more satisfactorily indicated. An artificial key to the genera is given under each sub-family, and the species are analyzed under the genera. The matter given under each species is apparently about four to six times greater than in the old 'Key,' and is sufficient to give in satisfactory detail, not only its technical characters, but a glimpse at the rôle it plays in life. The number of species and sub-species treated is eight hundred and ninety-nine, which are placed under three hundred and forty-nine genera. The technical names are marked for accent, and they are also etymologically defined.

Part iv. (pp. 821-830) is devoted to a 'Systematic synopsis of the fossil birds of North America,' numbering forty-six species. Of these, twenty-five are tertiary (sixteen being referred to living genera), twenty cretaceous, and one Jurassic. This part, the author tells us, has been revised by Professor Marsh.

The classification adopted is at some points radically different from that employed in the first edition, particularly as regards the primary divisions of the class. The number of 'orders' now adopted for North-American birds, which belong all to the 'sub-class' Carinatae, is thirteen, subdivided into twenty sub-orders, sixty-three families, and seventy-seven sub-families.

The twelve years which have passed since the appearance of the original edition of the 'Key,' have been marked by a striking increase in our knowledge of North-American birds. This advance would alone render any general work on the subject, published at that date, to some extent antiquated and unsatisfactory, however excellent it may have been in its time. The old 'Key' has unquestionably had a career of usefulness, and has helped on the advance that has so strongly characterized the last decade of North-American ornithology; the object of the treatise being to enable any one, by its aid, to identify his specimens without recourse to other information than that the book itself afforded. The undertaking was to some extent, at least in its methods, an innovation in zoology, and, however well it may have served its purpose, was obviously open to improvement, as such attempts must always be. Its defects were doubtless as quickly seen by its author as by others; and to remedy these, and bring the work down to date, the author was led to prepare this much enlarged, and in many ways greatly improved, second edition. The first edition emphasized, and in a large degree initiated, a new departure in respect to the status of many forms of North-American birds, which were degraded from species in regular standing to the grade sub-species or geographical races, and referred, as 'varieties,' to the species from which they were found to be not completely differentiated. Since that time the custom has arisen and become established, among American ornithologists, of discarding the interpolated 'var.' between the varietal and specific names of such forms; and, in accordance with this custom, the new 'Key' adopts the new 'trinomial' nomenclature for such intergrading forms as it seems wise to recognize in nomenclature. The names are, in fact, strictly those of the author's revised 'Check-list,' published in 1882, *plus* about a dozen since added.

As regards paper and typographical execution, the work is all that need be desired; the composition and press-work being that of the Cambridge University press. The author tells us that his publishers generously allowed him

'to make the book to suit himself,' sparing no expense to which they might in consequence be put. While some of the cuts are not above criticism, many of them are fine, so that their average grade is high; and in nearly every case their origin is duly accredited. The work as a whole is certainly very tastefully executed.

WIEDEMANN'S ELECTRICITY.

Die lehre von der elektricität. VON GUSTAV WIEDEMANN. 2 vols. Braunschweig, Vieweg, 1882-83. 11+795, 7+1002 p. 8°.

THE work which forms the subject of this notice is the successor to 'Die lehre vom galvanismus und elektromagnetismus,' by the same author, first published in 1861, and followed by a second edition in 1874. Ever since its publication, the original work has been recognized as a practically exhaustive treatise on the topics included within the limits set by the author. Every discovery and observation is referred to the original publication, and its date is given. These references, so characteristic of the previous work, are continued and extended in the present treatise; and they form a classified index to the literature of electricity with the historical advantage of dates. One is surprised at the extent and range of the literature to which reference is made.

It is a suggestive fact, that a third edition simply of the original work could not represent the present knowledge of galvanic electricity and electromagnetism with that unity and completeness which the author's plan contemplated. The separation between static and galvanic electricity, which obtained up to the middle of the present century, can no longer be maintained: hence Professor Wiedemann wisely decided to extend the scope of his work, and to prepare with immense labor a practically new book under the more comprehensive title of 'Electricity.' This decision must be universally approved; for, aside from the very evident advantage of having a complete treatise in place of a partial one, the present conception of electricity forbids the treatment of the subject under its historical divisions. This division, which seemed imperative twenty-five or thirty years ago, has now become impossible. No fundamental differences between the two classes of electricity, due to different methods of generation, are now recognized. With galvanometers sufficiently sensitive to be affected by static discharges, on the one hand, and with electrometers capable of measuring